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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,573	11/24/2003	Toshio Morii	245632US0	1226

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EXAMINER

MARCHESCHI, MICHAEL A

ART UNIT	PAPER NUMBER
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1755

DATE MAILED: 10/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/718,573

Applicant(s)

MORII ET AL.

Examiner

Michael A Marcheschi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/24/04, 6/24/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4, 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greenwood et al. (814).

Greenwood et al. teaches in sections [0012]-[0019], a silica slurry (silica sol) having a viscosity between 3-100 mPas comprising silica having a size of between 3-150 nm and water, wherein the slurry has a silica solids content of 1-about 60 wt. percent.

The reference teaches a high silica slurry which has the claimed silica content, silica size and viscosity. Although the claimed ratio is not literally defined, it is the examiners position that from the particle sizes defined by the reference coupled with the S values defined by the reference, the claimed values are broadly encompassed and therefore obvious because the S value is an indication of the degree of aggregation (higher S values indicates a lower degree of aggregation) and the claimed ratio is apparently indicating the same thing (outside the claimed range means more secondary particles (aggregates). With respect to the limitations of claim 4, the reference is silent with respect to impurities, thus it is the examiners position that this indicates that the silica is pure and therefore reads on the claimed limitations absent evidence to the contrary. With respect to the limitations of claim 6, the reference teaches a particle size

range and it is the examiners position that not all of the particle will have the same size, thus reading on the claimed limitation absent evidence to the contrary.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Greenwood (768) alone or in view of Payne.

Greenwood teaches in sections [0008]-[0034], a silica slurry (silica sol) having a stable viscosity comprising silica having a size of between 2 to about 150 nm and water, wherein the slurry has a silica solids content of 20 to about 80 wt. percent. Table 8 of the reference shows viscosity values for certain embodiments. The slurry can be used to polish wafers.

Payne teaches in column 1, lines 10+ that silica slurries are known to be used to polish silica wafers (in semiconductors).

The primary reference teaches a high silica slurry which has the claimed silica content and silica size and a low viscosity. Although the claimed ratio is not literally defined, it is the examiners position that from the particle sizes defined by the reference coupled with the S values defined by the reference, the claimed values are broadly encompassed and therefore obvious because the S value is an indication of the degree of aggregation (higher S values indicates a lower degree of aggregation) and the claimed ratio is apparently indicating the same thing (outside the claimed range means more secondary particles (aggregates). With respect to the specific viscosity, it is the examiners position that the viscosity of the broad reference composition will be similar to the viscosities defined in the tables and thus broadly reading on the claimed values absence evidence to the contrary. In addition, since the particle size is the same and the claimed ratio is apparent (see above reasoning), it is the examiners position that the

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composition having similar limitations will produce a composition having similar viscosity values because similar compositions are expected to produce similar results. In addition, it is apparent from the instant specification that these viscosities are a result of the claimed ratio which is suggested by the reference. With respect to the limitations of claims 3, 9 and 16, a stable slurry reads on this. With respect to the limitations of claims 4, 10 and 17, the reference is silent with respect to impurities, thus it is the examiners position that this indicates that the silica is pure and therefore reads on the claimed limitations absent evidence to the contrary. With respect to the limitations of claims 6, 12 and 19, the reference teaches a particle size range and it is the examiners position that not all of the particle will have the same size, thus reading on the claimed limitation absent evidence to the contrary. With respect to the polishing method (and substrate), the primary reference teaches that the slurry is used to polish wafers and the claimed step involves a conventional process. The broad teaching of "wafer", as defined, broadly encompasses silica wafers and semiconductor substrate. In the alternative, Payne teaches that silica slurries are known to be used to polish silica wafers (in semiconductors) and thus its use for this specific wafer is obvious in the teachings according to the primary reference.

Claims 1 and 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-152134.

The JP reference teaches in section [0014], a colloidal silica slurry, wherein the slurry contains colloidal silica at a concentration of 15-65 wt. %. In sections [0009]-[0010] the silica is shown to have a particle size of 40-150 nm and the ratio of B/A (ratio for content of secondary particles (aggregates) is less than 1.4.

The reference teaches a high silica slurry which has the claimed silica content and silica size. Although the claimed ratio is not literally defined, it is the examiners position that from the particle sizes defined by the reference coupled with the B/A ratio defined by the reference, the claimed values are broadly encompassed and therefore obvious because the B/A ratio is an indication of the degree of aggregation and the claimed ratio is apparently indicating the same thing (outside the claimed range means more secondary particles (aggregates)). With respect to the specific viscosity, it is the examiners position that since the particle size is the same and the claimed ratio is apparent (see above reasoning), it is the examiners position that the composition having similar limitations will produce a composition having similar viscosity values because similar compositions are expected to produce similar results. In addition, it is apparent from the instant specification that these viscosities are a result of the claimed ratio which is suggested by the reference. With respect to the limitations of claim 3, it is the examiners position that absent any teaching of unstable, the slurry reads on a stable slurry in the absence of any evidence showing the contrary. With respect to the limitations of claim 4, the reference is silent with respect to impurities, thus it is the examiners position that this indicates that the silica is pure and therefore reads on the claimed limitations absent evidence to the contrary. With respect to the limitations of claim 6, the reference teaches a particle size range and it is the examiners position that not all of the particle will have the same size, thus reading on the claimed limitation absent evidence to the contrary. The examiner acknowledges that section [0011] defines the silica content of a polishing slurry, which is outside the claimed range (teaches away from the claimed silica content in polishing slurries), but the rejected claims are not directed to a polishing slurry.

The initial slurry of the reference, prior to making it into a polishing slurry (i.e. diluted with more water), has the claimed silica content and therefore no distinction is seen to exist.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. in view of Shimazu et al. and Payne.

Kobayashi et al. teach in sections [0018]-[0031] and claim 15, a silica slurry having a viscosity less than 50 mPas (stable viscosity) comprising fumed silica (small primary particle size) and water, wherein the slurry has a silica solids content of more than 10 wt. percent. The slurry is used for chemical mechanical polishing (CMP).

Shimazu et al. teach in claim 12, that fumed silica is known to have the claimed size.

The primary reference teaches a silica slurry which has a silica content of at least 10 wt. percent and this **broadly reads** on the claimed contents, especially since no upper limit is defined. Assuming arguendo, burden is upon applicants to show the contrary. With respect to the size, although this is not explicitly defined, it is the examiners position that the recitation of "fumed silica" reads on silica having the claimed primary size, as is clearly shown by Shimazu et al. With respect to the claimed ratio, this is apparent because, as can be seen from the instant specification, the claimed viscosities (these viscosities are clearly disclosed by the reference) are a result of the claimed ratio, thus if the viscosities are the same (and the size and solids content are obvious (see above)), the claimed ratio is apparent because a composition having similar viscosity values, coupled with other criteria that are similar (size and solids content) is expected to have similar properties (i.e. ratio) that would result in said viscosity. In other words, it appears that the claimed viscosity is a direct result of the claimed ratio and since the claimed

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viscosity is disclosed by the reference, the claimed ratio is indirectly suggested absent evidence to the contrary. With respect to the limitations of claims 3, 9 and 16, a stable slurry reads on this. With respect to the limitations of claims 4, 10 and 17, the reference is silent with respect to impurities, thus it is the examiners position that this indicates that the silica is pure and therefore reads on the claimed limitations absent evidence to the contrary. With respect to the limitations of claims 6, 12 and 19, the primary reference suggests a particle size range (makes obvious the claimed particle size range) and it is the examiners position that not all of the particle will have the same size, thus reading on the claimed limitation absent evidence to the contrary. With respect to the polishing method (and substrate), the primary reference teaches that the slurry is used as a CMP and the claimed step involves a conventional process. The broad teaching of "CMP", as defined, broadly encompasses chemical mechanical polishing of substrates, including the claimed ones. In addition, Payne teaches that silica slurries are known to be used to polish silica wafers (in semiconductors) and thus its use for this specific wafer is obvious in the teachings according to the primary reference.

In view of the teachings as set forth above, it is the examiners position that the references reasonably teach or suggest the limitations of the rejected claims.

"A reference is good not only for what it teaches but also for what one of ordinary skill might reasonably infer from the teachings. *In re Opprecht* 12 USPQ 2d 1235, 1236 (CAFC 1989); *In re Bode* USPQ 12; *In re Lamberti* 192 USPQ 278; *In re Bozek* 163 USPQ 545, 549 (CCPA 1969); *In re Van Mater* 144 USPQ 421; *In re Jacoby* 135 USPQ 317; *In re LeGrice* 133 USPQ 365; *In re Preda* 159 USPQ 342 (CCPA 1968)". In addition, "A

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reference can be used for all it realistically teaches and is not limited to the disclosure in its preferred embodiments" See *In re Van Marter*, 144 USPQ 421.

"A generic disclosure renders a claimed species prima facie obvious. *Ex parte George* 21 USPQ 2d 1057, 1060 (BPAI 1991); *In re Woodruff* 16 USPQ 2d 1934; *Merk & Co. v. Biocraft Lab. Inc.* 10 USPQ 2d 1843 (Fed. Cir. 1983); *In re Susi* 169 USPQ 423 (CCPA 1971)".

The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected the overlapping portion of the range disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, see *In re Malagari*, 182 U.S.P.Q. 549; *In re Wertheim* 191 USPQ 90 (CCPA 1976)".

Evidence of unexpected results must be clear and convincing. *In re Lohr* 137 USPQ 548. Evidence of unexpected results must be commensurate in scope with the subject matter claimed. *In re Linder* 173 USPQ 356.

The references cited on the 1449 have been reviewed by the examiner and are considered to be art of interest since they are cumulative to or less than the art relied upon in the above rejections.

Any foreign language documents submitted by applicant has been considered to the extent of the short explanation of significance, English abstract or English equivalent, if appropriate.

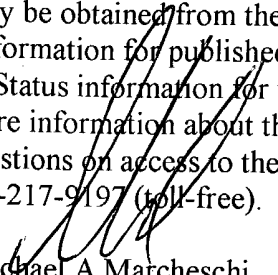
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A Marcheschi whose telephone number is (571) 272-1374. The examiner can normally be reached on M-F (8:00-5:30) First Friday Off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark L Bell can be reached on (571) 272-1362. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

10/04
MM


Michael A Marcheschi
Primary Examiner
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